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FOUR CORNERS REGIONAL STUDY

PHASE I, TASK 4, FEASIBILITY OF CONTROL MEASURES
(DRAFT METHODOLOGY)

NCAQ STAFF SUMMARY

COMPLETED
ORIGINAL

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Contractor: Los Alamos Scientific Laboragory

The contractor proposes to analyze the feasibility of control measures for airborne emissions in the study region by determining whether it is possible to force a given source to achieve a given performance standard. Feasible standards will incorporate technologically attainable emission rates and reliable operation, and will be examined in the light of legal, technical and economic constraints. The role of timing in technology development will also be considered in making determinations of feasibility.

The contractor distinguishes between new and existing source constraints. The contractor discusses the particular constraints for existing facilities, namely coal-fired power plants, that would result in lower (less control) standards than for new facilities, and recognizes the site-specific nature of the constraints. The methodology description proposes consideration of control feasibility for both power plants and synthetic fuel plants, but does not state explicitly whether plant-specific analysis or category-based analysis is anticipated.

National Commission on

Air Quality

Report Disclaimer

This draft report is being made available for public review and comment. This report is undergoing review by the NCAQ staff at the date of its release. Therefore, this draft report has not necessarily been revised to reflect any concerns of NCAQ staff. Your comments will assist the NCAQ staff in preparing final reports and recommendations. This report has not been reviewed by the Commission members and therefore does not reflect Commission policy or conclusions.

Task 4: Feasibility of Control Measures

Method of Analysis

The purpose of this note is to suggest an approach for analyzing the feasibility of control measures for airborne emission sources in the Four Corners region. The core of this approach is found in the following question: is it possible to force a given source to achieve a given performance standard? If so, we would say that that standard is feasible for that source. "Performance standard," as used here, has two dimensions: emission rate and reliability. Technologies which achieve a high instantaneous removal efficiency but which frequently break down should not be considered adequate performers.

Three possible constraints limit the definition of feasibility.

(1) Legal. Does the legal authority exist to require a source to meet the given performance standard?

(2) Technical. Does (or will) abatement equipment exist to meet the given performance level? Can such equipment be installed at the site in question?

(3) Economic. Economic feasibility has two aspects. First, can the firm assemble the cash required? Second, is the cost of meeting the standard so great that the source decides to abandon the entire facility, whether a new or an existing plant? We would consider such a standard infeasible.

To make the question of feasibility meaningful, we must also impose a time limitation. After all, the only real limits to whether a standard will eventually be feasible are basic physical laws. The question of timing enters the picture indirectly, by affecting the other constraints. Considerations of due process, for example, may prevent any regulation at all from being

implemented too quickly. Timing is perhaps most important insofar as it affects the technical constraint. What is feasible within two years, for example, probably includes only the technology currently available. A longer time horizon, say, five years, may allow the implementation of technologies still in the pilot or demonstration stage (whether such technologies may legally be required is another matter).

In our analysis we will distinguish between new and existing sources, because the economic, legal and technical constraints for existing sources will be much more binding. The feasible standard of performance for such sources will be correspondingly lower. The Clean Air Act, as amended in 1977, has several provisions which apply to new plants only, including New Source Performance Standards, the "Best Available Control Technology" (BACT)requirement for plants in PSD areas, and the "Lowest Achievable Emission Rate" (LAER) requirement for plants in nonattainment areas. BACT and LAER are especially noteworthy from the standpoint of feasibility, because both are supposed to be case-by-case determinations of the most effective technology possible. In contrast, until 1977 existing plants were exempt from any federal standards on emissions; whatever standards were applicable to such plants were state SIP regulations. Now, however, the visibility section (Sec. 169A) of the 1977 Amendments may require more stringent controls of existing plants that affect air quality in the national parks, although it will probably not be possible to require anything near as stringent as BACT or LAER.

What is technically possible may also be limited at an existing plant, because the other equipment already in place may not permit the use of some abatement approaches. This makes technical feasibility at an existing plant very site specific. For a new plant, considerations of pollution

control can be built in from the ground up, considerably increasing the range of possibilities. What is feasible is still site-specific, but less than with an existing plant.

Finally, the economic constraint may limit what is feasible at an existing plant. In part, this follows because older facilities may be marginal economically to begin with. Even when they are not, a plant's utilization factor typically declines with age, both due to increased maintenance requirements and a firm's preference for using newer units with lower operating costs. As output declines, a fixed investment will have a greater and greater impact on unit costs. Other things being equal, then, a given investment in pollution abatement will be less feasible economically for an existing plant than for a new plant.

The definition of feasibility used here is somewhat broader than the usual notion of technical feasibility, because in our experience the legal and economic constraints on what can be required are far more likely to be binding than the technological constraint. Thus, concern with technical feasibility alone is likely to give a misleading picture of the prospects for emission reduction. In addition, most of the recent advances in emission control technology have been pollution-reducing, not cost-reducing, and the marginal cost of emission reduction as one approaches 100 percent efficiency remains quite high. Thus, the most cost-effective strategies for regional air quality management may not require the frontier technologies. Both considerations act to reduce the importance of pure technical feasibility.

The only existing stationary sources with regional impact in the Four Corners region are coal-fired power plants. Regionally significant new sources in the region will also most likely be power plants, although synthetic fuels plants are also a possibility. We will consider the feasibility of controls for facilities in each category.